White Paper Report

Report ID: 99884

Application Number: PF5007410

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Institution: Friends of the Middle Border, Inc.

Reporting Period: 7/1/2010-6/30/2011

Report Due: 9/30/2011

Date Submitted: 9/28/2011

Interim Performance Report
NEH Sustaining Cultural Heritage Collections

Grant Number: PF-50074-10

Improved Humanities Collections Environment Control Project

Project Director: Lori Holmberg

Grantee Institution: Friends of the Middle Border, Inc.
(dba Dakota Discovery Museum)

September 28, 2011

Narrative

At the beginning of the Improved Humanities Collections Environment Control Project, collections objects stored in the lower level area were often subjected to extremely low humidity levels during the winter months and objects in both storage and exhibit areas, as well as staff and guests within these areas were subject to air quality issues due to the lack of outside air transfer into the building. There had also been repeated instances of sudden temperature and humidity fluctuations during the wintertime due to boiler failures caused by frost sealing the mechanical intake pipes.

In July to 2009, the Dakota Discovery Museum retained the services of Ms. Rebecca Ellis of the mechanical engineering firm Questions & Solutions, Inc. These issues, as well as concerns about the mechanical system's energy efficiency were addressed as part of a report provided by Ms. Ellis after an on-site study.

The goal of the Improved Humanities Collections Environment Control Project was to implement the recommendations of the report provided by Ms. Ellis. Her recommendations were to upgrade the existing computerized heating, ventilation and air conditioning (HVAC) control system, to install a steam humidifier for the museum's collections storage area, to relocate an existing thermostat and humidistat from a non-collections area into exhibit space, to enable roof top unit economizers to improve air quality and to make adaptations to the exhaust and intake pipes on the exterior of the building to prevent boiler failures.

The Friends of the Middle Border, Inc. did encounter some challenges in implementing the Improved Humanities Collections Environment Control Project, primarily due to staffing issues. The project was not able to be implemented in a timely fashion as the economic downturn forced the museum to reduce staffing from three fulltime to only one fulltime employee, the Project Director. The Project Director was required to fill the duties of all staffing positions, relying on minimally trained older volunteers to help keep the museum open to the public. Unfortunately, the on-going daily office, record and bookkeeping duties, volunteer coordination and oversight left little time to coordinate, oversee, implement and do follow up for the project. An extension was requested in December 2010 and approved, with a new completion date of June 30, 2011.

The relocation of existing stat units, the installation of the new humidification equipment, necessary technological upgrades for the new software and the installation of the software was completed during February 2011. The addition of a new firewall component was a necessary addition to the project in order to provide VPN (Virtual Private Network) access for the outside heating and cooling firm Tessier's Inc. to monitor the HVAC system. Training with the new software went smoothly with continued support from Tessier's. The HVAC system is now easily monitored and adjusted in real-time as needed by the Project Director/ Executive Director/ Curator.

The project component of extending the exhaust and intake pipes of the boilers was not able to be completed as planned. After discussion with the firm that installed the boilers, it was discovered that the specifications of the boiler units were at their maximum, meaning that neither the exhaust or intake pipes could be altered as the units were only rated for a finite number of feet. The alternate plan of creating a divisional wall between the exhaust and intake pipes was then explored. A section of vinyl fencing 6 feet high by 6.5 feet long was installed between the exhaust and the intake pipes. This is expected to redirect the warm moist air being expelled from the exhaust pipes in the winter up and away from the intake pipes thereby preventing frost from

forming and sealing the intake pipes. Because of its placement, it is also expected to disrupt the prevalent north winds and reduce the potential of direct line winds going down the intake pipes and causing the boiler units to shut down.

Volunteer Project Advisor, Justin Luther was kept notified of all stages of the project and given opportunity for input via email. He was able to visit the site to review the project shortly after the installation of the equipment.

The Friends of the Middle Border, Inc. was not able to secure additional outside funds outside of donated services through fund-raising or additional granting agencies. This was again primarily due to the museum being understaffed and the restricted time of the Project Director/Executive Director. The Friends of the Middle Border, Inc. does hold in reserve funds specifically for the care of collections. Funds to complete the Improved Humanities Collections Environment Control Project were drawn from this source.

For all intents and purposes the primary project goals have been met. Summarized documents of the project have yet to be produced and disseminated to area museums.